OFFICE OF MANAGEMENT AND BUDGET
FEDERAL ENTERPRISE ARCHITECTURE - PROGRAM MANAGEMENT OFFICE
SOLUTIONS ARCHITECT WORKING GROUP

Position: SOLUTIONS ARCHITECT

INTRODUCTION

The Federal Enterprise Architecture Program Management Office (FEA-PMO) was established on February 6, 2002, in accordance with direction issued by the Associate Director for Information (IT) and E-Government, Office of Management and Budget (OMB). The lack of a Federal enterprise architecture was cited by the 2001 Quicksilver E-Government Task Force as a key barrier to the success of the 24 cross-agency E-Government initiatives approved by the President's Management Council in October 2001. (Summaries of the initiatives are provided in *Appendix A* of this document.)

The FEA-PMO, in collaboration with the Federal Chief Information Officer (CIO) Council Architecture and Infrastructure Committee is responsible for developing a core set of standardized technology models to facilitate technology solutions and the development of a complete architecture (baseline, target, and transition) for each of the current E-Government initiatives.

Technical architecture solutions must: (1) conform to minimum standards, e.g., for security, integration, interoperability; (2) integrate properly with existing and planned government services; (3) utilize to the greatest extent possible open technologies; and (4) avoid vendor-specific technical architecture solutions.

STATEMENT OF DUTIES

The Solutions Architect will direct the specific technical architectural design in support of the overall technical architectural direction specified by the Chief Architect. The Solutions Architect will work closely with the software development team in order to create the initial technical architecture, as well as to update the system technical architecture in response to system enhancements and modifications. The Solutions Architect will focus on maximizing the use of common architectures, components, and strategies across efforts. The use of common architectures (ex. J2EE with XML over SOAP) will lead to significant value capture, and reduce the total cost of ownership for the government, and as such is a significant responsibility for the Solutions Architect. Additionally, the Solutions Architect will need to work with the Chief Architect and other Solutions Architects to set standards and ensure the consistent application of: architectures, business logic, documentation for external parties, security, interoperability, reusability, scalability, extensibility, and dependability.

The Solutions Architect will engage with the selected integrator (in-house or external teams) to deliver component-based technical architectural solutions to end-user customers. The Solutions Architect may individually lead the technical architecture design for a particular effort, or may be teamed with additional Solutions Architects, depending on the needs of the effort. Solutions Architects will advise and guide the project managers for each specific effort, ensuring that the Chief Architect’s decision and common vision is communicated and properly executed for each effort.

The Solutions Architect will participate in a variety of forums with other Solutions Architects and the Chief Architect in order to share best practices, lessons learned, continually update the technical system architecture requirements based on changing technologies, and share knowledge related to recent and current and up-coming vendor products and solutions. The level of communication with other Solutions Architects and the Chief Architect will be substantial, requiring the Solutions Architect to work equally

well independently as well as in small and medium sized groups. Since there are typically a variety of different technical architecture solutions for a particular problem, the Solutions Architect should be able to handle stressful situations and discussions while still clearly communicating ideas and concepts.

The Solutions Architect will keep abreast of all current and upcoming technologies related to component based technical architectures, specifically those surrounding Open Technologies and Open Standards, J2EE, .NET, and web services. The Solutions Architect will maintain a high-level of understanding through reading periodicals, magazines, and on-line media. The Solutions Architect will attend and participate in a variety of conferences surrounding these technologies, and will be expected to network heavily with other Solutions Architects working for the public sector as well as the private sector. The Solutions Architect will develop relationships with vendors providing products and/or services in the related technologies in order to gain a forward-looking vision of the direction of the technologies.

In addition to designing the specific technical architecture, the Solutions Architect will provide oversight to the software development staff in order to share lessons learned, best practices, and provide overall recommended guidance. Although the Technical Project Manager will directly oversee the software development staff, the Solutions Architect will be required to stay closely involved with the software development staff to ensure that the technical system architecture design is being developed to properly. Additionally, the Solutions Architect will work closely with the Chief Architect in order to ensure that the design adheres to all organizational technical architecture standards, and incorporates best practices and lessons learned from other projects. Lastly, a significant requirement exists to advise top Information Management (IM) officials on the benefits of a component based technical architecture, and to maximize the benefit of an organization-wide technical architecture standardization policy.

The Solutions Architect will work under the administrative supervision of the Chief Architect. The Solutions Architect independently develops and modifies the objectives and boundaries of assignments according to the needs of the project, at all times following the high-level technical architecture design selected by the Chief Architect. Completed work is considered technically and administratively authoritative, is normally accepted without significant change, and is evaluated primarily for accomplishment of mission. This position requires minimal travel and interface with all levels of IM on an individual basis. As a rule, the Solutions Architect is required to make decisions concerning work projects without referring the matter to his/her supervisor. Many times, the decisions will have to be made under pressure where time is of the essence in order not to delay missions of national importance.

PROFESSIONAL / TECHNICAL QUALIFICATIONS REQUIRED

1. The Solutions Architect must have a broad knowledge of information architecture designs, infrastructures, advanced information systems concepts, state-of-the-art information technology frameworks, interfaces, protocols, best practices, and principles related to the myriad of IM systems including client/server and web-based applications. The Solutions Architect must also have an understanding of advancements in information architecture concepts and characteristics, and open standards such as SOAP, WDSL, XML, and FTP.

2. The Solutions Architect must have excellent Systems Architecture / Engineering skills and a proven track record of successful technical architecture designs. Ideally, the Solutions Architect would have a significant background in software development, specifically in J2EE or in a .NET supported language.

3. The Solutions Architect must have experience with a variety of software technical architectures, particularly Java 2 Enterprise Edition (J2EE) and/or Microsoft .NET solutions. The Solutions

Architect must also have experience with web services, as well as the various protocols used throughout an Internet-based component based architecture system (ex. WDSL, SOAP, XML, HTTP, etc.). The Solutions Architect should have a solid understanding (actual development experience desirable) of object oriented design and development. It is desirable that the Solutions Architect have experience with data warehouses and associated technologies (OLTP, OLAP) and have experience with managing extremely large data systems. Additionally, the Solutions Architect must understand Open Technologies and Open Standards, and how they can best be leveraged to solve specific technical problems.

4. The Solutions Architect should have practical experience in managing and/or implementing solutions that include as an area of focus one or more of the following critical areas: network security, system security, environment security, distributed processing, data warehouses, dependability and/or redundancy, scalability, adaptability, privacy of user information (government experience desirable), common architectures, web services, and object oriented systems.

5. Since the Solutions Architect will act as a technical architecture advisor in the design and support and development of the technical system in accordance with the technical architecture selected by the Chief Architect, it is essential that the Solutions Architect be able to perform at a high level (i.e. articulating the technical architecture to both management and technical staff) and a low level (i.e. communicating specific technical architecture concepts to the technical development staff). As such, the Solutions Architect must have exceptional communication skills (written, oral, presentation), listening skills, and the ability to think clearly under stress.

6. The Solutions Architect should possess a very broad technical and managerial background to successfully handle the IM complexities involved, the very difficult schedules imposed, and analyze problems and negotiate with management, the Chief Architect, other Solutions Architects, and other technical experts in order to implement recommended solutions for information architecture and IM standards initiatives.

OTHER INFORMATION

1. Guidelines. Guidelines consist of the National Institutes of Standards and Technology, General Services Administration, Office of Management and Budget, Information Technology Industries Council, and American National Standards Institute regulations and standards, Federal Information Processing Standards, National Communications System Government-wide telecommunications standards (FED-STDS), Telecommunications Control Protocol/Internet Protocol Standards, Federal Acquisition Regulations, Federal Information Resources Management Regulations, DOE Technical Standards Program, Departmental IM policies, and broadly stated technical objectives regarding the component based Technical Architecture Program. The Solutions Architect interprets this guidance in relation to the organization's technical architecture and standards program needs, isolates areas appropriate to further study, and devises and plans projects to define specific objectives. Established records and local personnel are frequently inadequate sources of information upon which to base the required studies. Judgment is required in developing ways of obtaining data on and evaluating the significance of issues relating to the formulation, definition, structure and currency of the technical architecture including not only technology but its relationship to providing information to support critical tasks. Most external agency policy is general in nature with little specificity regarding the approach to be followed. Establishment of new or revised policies, standards, and guidelines on information management and or appropriate modifications to the organization technical architecture based upon such general guidelines is required.

2. Complexity. The work primarily involves a depth of analysis in the technical architecture and IM standards specialty areas encompassing hardware, software, interfaces, protocols, IM practices, technology advances, user needs, and networking topologies. The work concerns a field of rapidly evolving technology, often requiring departures from established practices and integrating the efforts of other IM experts within and outside of the organization. The implementation of new IM capabilities, technical architectures, and standards are critical and must be thoroughly researched as any minor problem could have a major impact on the delivery of the project. Projection of technical developments and project accomplishments require coordination with key applications and specialty area IM experts nationwide. Many technical architecture problems have more than one viable solution, and many organizations have biases regarding the proper method to proceed. As a result, proposed designs often result in solutions that are opposed by other organizations requiring sensitive, sensible and extensive arbitration and negotiations with upper management of these organizations.

3. Scope and Effect. The work primarily involves the design of a specific system technical architecture based upon the selected high-level architecture by the Chief Architect. Secondarily, the Solutions Architect must support the development, testing, and deployment of the system in order to ensure that the technical architecture is rigorously followed and fully utilized. The specific work organizational structure will be defined based on the capabilities of other Solution Architects, but is likely to be one of the following: (1) this individual will serve as the technical architecture manager for a single technical project, or (2) the individual will work with a team of other Solutions Architects with the team based either on the selected technology, architecture, technical layer (i.e. business logic, presentation, etc.), type of project (ex. homeland defense) or size of project (ex. a centralized service or a decentralized service). The specific work organizational structure may change over time as the capabilities and structure of the other Solutions Architects changes, but the overall goal of the Solutions Architects role will be to ensure that the selected technical architecture is properly designed, developed, tested, and deployed. The Solutions Architect will work closely with the Chief Architect assigned to each project to ensure that each project maximizes the benefits of lessons learned from similar projects, best practices, as well as to verify that the system adheres to the minimal technical architecture standards.

APPENDIX A

INITIATIVE SUMMARIES

Government to Citizen

1. Recreation One-Stop
   - Would build upon "Recreation.gov" and provide a one-stop, searchable database of recreation areas Nation wide, featuring online mapping and integrated transactions, including online campground reservations and the purchase of recreational passes, maps and other products. The project would include links to recreational opportunities provided by all levels of government.
   - Proposed Agency Managing Partner: DOI

2. Eligibility Assistance Online
   - Through a common Internet portal, citizens (with a focus on high-need demographic groups) would have an online tool for identifying government benefit programs from which they may be eligible to receive assistance.
   - Proposed Agency Managing Partner: Labor

3. Online Access for Loans
   - Would allow citizens and businesses to find the loan programs that meet their needs.
   - Proposed Agency Managing Partner: Education

4. USA Services
   - Would use best practices in Customer Relationship Management to enable citizens to quickly obtain service online, while improving responsiveness and consistency across government agencies. This initiative would enable citizens to personalize the combination of services they obtain across multiple programs and agencies in a privacy-protected environment.
   - Proposed Agency Managing Partner: GSA

5. EZ Tax Filing
   - Would make it easier for citizens to files taxes in a Web-enabled environment.
   - Proposed Agency Managing Partner: Treasury/IRS

Government to Business

6. Online Rulemaking Management
   - Would provide access to the rulemaking process for citizens anytime, anywhere. An existing "e-Docket" system will be expanded and enhanced to serve as a government-wide system for agency dockets. Other agency systems would use the system by creating "storefronts" consistent with statutory requirements for each agency under the Administrative Procedures Act. Comments would be organized using knowledge management tools to improve the quality of rules.
   - Proposed Agency Managing Partner: DOT

7. Expanding Electronic Tax Products for Businesses
   - This initiative's goals include decreasing the number of tax-related forms that an employer must file, providing timely and accurate tax information to employers, increasing the availability of electronic tax filing and modeling simplified federal and state tax employment laws.
   - Proposed Agency Managing Partner: Treasury /IRS

8. Federal Asset Sales
   - Prospective customers wold be able to find assets that they are interested in, regardless of the agency that holds those assets. Customers would be able to bid and/or make purchases electronically for financial, real and disposable assets.
   - Proposed Agency Managing Partner: GSA

9. International Trade Process Streamlining
   - Would create a single customer-focused site where new or existing exporters could be assisted electronically through the entire export process. The 20 current Web sites would be organized and accessed through a single entry point.
   - Proposed Agency Managing Partner: DOC

10. One-Stop Business Compliance Information
   - Would provide information on laws and regulations that can help users understand compliance information. It would also offer wizards and tutorials to help users determine if rules apply to them and how to proceed. To the maximum extent possible, permits would be completed, submitted and approved online.
   - Proposed Agency Managing Partner: SBA

11. Consolidated Health Informatics
   - Would provide the basis for a simplified and unified system for sharing and reusing medical record information among government agencies and their private healthcare providers and insurers. It would enable a single mechanism for making those records accessible.
   - Proposed Agency Managing Partner: HHS

Government to Government

12. Geospatial Information One-Stop
   - Would provide access to the Federal government's spatial data assets in a single location and help make state and local spatial data assets more accessible. Federal agencies would also make their planned and future spatial data activities available to state and local governments to promote collaboration and reduce duplicative efforts. Data standards developed through an intergovernmental process would result in data that can be used multiple times for multiple purposes, saving taxpayer money. It would also help empower the private sector by communicating the characteristics of a desired standardized data product.
   - Proposed Agency Managing Partner: DOI

13. E-Grants
   - Would create an electronic grants portal for grant recipients and the grant-making agencies that would streamline, simplify and provide an electronic option for grants management across the government. This effort will include the work of the 26 Federal grant-making agencies to implement the Federal Financial Assistance Management Improvement Act of 1999 (P.L.106-107).
   - Proposed Agency Managing Partner: HHS

14. Disaster Assistance and Crisis Response
   - Involves a public, one-stop portal containing information from applicable public and private organizations involved in disaster preparedness, response, recovery and mitigation. This portal would also serve as a single point of application for all disaster assistance programs.
   - Proposed Agency Managing Partner: FEMA

15. Wireless Public Safety Interoperable Communications/Project (SAFECOM)
    - For public safety officials to be effective in their daily responsibilities, as well as before, during and after an emergency event, public safety agencies throughout all levels of government, i.e., Federal, state and local, must be able to communicate with each other. This initiative would address the Nation's critical shortcomings in efforts by public safety agencies to achieve interoperability and eliminate redundant wireless communications infrastructures. At the same time, it would assist state and local interoperability and interoperability between Federal public safety networks.
    - Proposed Agency Managing Partner: Treasury

16. E-Vital
    - Would expand the existing vital records online data exchange efforts between Federal agencies and state governments.
    - Proposed Agency Managing Partner: SSA

Internal Efficiency and Effectiveness

17. E-Training
    - The vision is to provide a repository of government-owned courseware to be made available to all governments (Federal, state and local), to provide high interest and government-required training to government employees at economies of scale pricing. In addition, this would foster development of communities of practice. This initiative supports achievement of the President's Human Capital initiative.
    - Proposed Agency Managing Partner: OPM

18. Recruitment One-Stop
    - Would improve the Federal hiring process by improving the functionality of the Federal automated employment information system. It would provide job seekers with streamlined resume submission, online feedback about their status in the employment process and integration with automated assessment tools. The initiative would provide Federal employers with a searchable resume database.
    - Proposed Agency Managing Partner: OPM

Enterprise Human Resources (HR) Integrations

19. Integrated Human Resources and E-Clearance
    - Would eliminate the need for paper employee records, enable strategic decisions regarding the use of human capital and financial resources to improve agency performance and address emerging needs. It would also allow for the electronic transfer of HR data throughout the Federal sector, better protect the rights and benefits of the Federal workforce and streamline and improve government-wide reporting and data analyses. It would reduce the time required to seek and access employee and contractor security clearance information.
    - Proposed Agency Managing Partner: OPM

20. E-Payroll/HR (Payroll Processing Consolidation)
    - The vision is to simplify and unify elements of the Payroll/HR process in order to consolidate and integrate HR and payroll systems across government. This effort would provide several hundred million dollars of savings to organizations and significantly reduce future IT investments and

could foster direct privatization. This initiative supports achievement of the five dimensions of the President's Management Agenda.
- Proposed Agency Managing Partner: OPM

21. E-Travel
    - Agencies would use a common travel management system throughout the Federal government. Existing travel management resources will be consolidated and processes will be simplified for cheaper, more efficient operation.
    - Proposed Agency Managing Partner: GSA

22. Integrated Acquisition Environment
    - Agencies would begin sharing common data elements to enable other agencies to make more informed procurement, logistical, payment and performance assessment decisions. It will also allow agencies to make maximum use of E-market approaches.
    - Proposed Agency Managing Partner: GSA

23. Electronic Records Management
    - Would provide the tools that agencies will need to manage their records in electronic form, addressing specific areas of electronic records management where agencies are having major difficulties. This project would provide guidance on electronic records management applicable government-wide and will provide tools for agencies to transfer electronic records to NARA in a variety of data types and formats so that they may be preserved in for future use by the government and citizens.
    - Proposed Agency Managing Partner: NARA

Initiatives That Address Barriers to E-Government Success

24. E-Authentication
    - Would build and enable the mutual trust needed to support widespread use of electronic interactions between the public and government and across governments. This would establish a method for satisfactorily establishing 'identity,' without which the promise of E-Government will never reach its full potential. The project will establish common interoperable authentication solutions for all of the E-Government initiatives.
    - Proposed Agency Managing Partner: GSA (Infrastructure)